2016

Do Macroeconomic Structures and Policies Shape the Employment Intensity of Growth Differently for Women and Men?

Bret Anderson
University of Rhode Island, bret@uri.edu

Citation/Publisher Attribution
Anderson, Bret. 2016. "Do Macroeconomic Structures and Policies Shape the Employment Intensity of Growth Differently for Women and Men?" *Journal of Economic Issues* 50, no. 4 (November): 940-962. http://dx.doi.org/10.1080/00213624.2016.1249744
Available at: http://dx.doi.org/10.1080/00213624.2016.1249744

Do Macroeconomic Structures and Policies Shape the Employment Intensity of Growth Differently for Women and Men?

Bret Anderson
Dept. of Economics
Chafee Social Science Center Rm. 806
10 Chafee Road
University of Rhode Island
Kinston, RI, USA 02881

bret@uri.edu
401-874-7293

Abstract (197 Words)

Since all macroeconomic policies are enacted within a certain set of distributive relations and institutional structures, the employment intensity of growth is likely to vary for men and women depending on the nature and context of output growth. The gendered nature of this growth-employment nexus is examined by analyzing the differential impacts that macroeconomic policies and structures have on growth's employment intensity by gender for 80 countries from 1990-2012. Such an understanding is of particular relevance to policymakers concerned with the linkages between growth and human development, as the question of whether the benefits of economic growth are broadly shared is one that centers on the capacity of economies to generate high-quality employment. Though education levels and non-agricultural sectors are associated with more employment intensive growth for men and women, policies supporting reductions in non-wage care work, prioritizing public expenditures on education, and promoting girls' secondary school enrollment are especially linked with growth that is more employment intensive for women. The results here illuminate broad trends through a very wide lens and should be applied in conjunction with more intimate knowledge of how cultural, technological, legal, political, and economic activities uniquely affect one another in particular countries.

Keywords: inclusive growth, employment, gender, macroeconomics, inequality

JEL: B54, O4, E24, F66

Word Count:
Main document, 7125.
Including front and back matter, 8825.
Data appendices (suitable for "online only" or simply "available upon request"), 2228.

1 Introduction

Macroeconomic structures and policies influence growth's employment generating potential. For example, growth in a natural resource- or agriculture-dependent economy will drive employment differently than in a service-based economy. As Kapsos (2005) has shown, service sector employment has been more responsive to output growth than has industrial or agricultural employment for much of the past 25 years. Not only does growth's employment intensity vary across economies, but Heintz (2006) also provides evidence that it has been on the decline since the early 1980s. Along with these observations, other contextual features may influence this growth-employment relationship such as labor market characteristics, global positioning, or government policies.

Further complicating matters is that women and men are often positioned differently in the labor market, which suggests that growth's employment benefits are likely distributed unevenly and dependent on the macroeconomic context. Elson and Cagatay (2000: 1347-1348) remind us that "all macroeconomic policies are enacted within a certain set of distributive relations and institutional structures and that they all entail a variety of social outcomes". Alongside this premise, an expanding body of research on gender and macroeconomics has recently shed light on the gendered nature of macroeconomic policies and structures. It is from this foundation that this study seeks to better understand how the macroeconomic structures and the policies that shape them, impact the employment intensity of growth differentially by gender.

In order to analyze the growth – employment nexus from a gender aware perspective, the paper first estimates men and women's employment intensities of growth for a panel of 80 countries from 1990-2012. Employment intensities measure the percentage change in employment associated with a given percentage change in output. And though this paper

contributes by bringing past estimates of employment intensities up to date, the primary focus of the paper is not the point estimates themselves but the statistical explanations of them, which draw out the gendered social content of macroeconomic structure and policies. To that end, measures of macroeconomic structure, global position, labor supply, demographic features, and other policy-related variables are included. In line with prior work, the analysis finds that average educational attainment, general industrialization patterns, and lower economic volatility are associated with more employment intensive GDP growth for both men and women. Of these factors, educational attainment is most strongly associated. Policies that support reductions in non-wage care work, such as investments in information and communications technology infrastructure, and policies that prioritize public expenditures on education and girls' secondary school enrollment are especially linked with growth that is more employment intensive for women. No convincing statistical evidence of consistent impacts on employment intensities stemming from trade-related measures, inflation, or exchange rate undervaluation is apparent for this sample.

Even though estimates of employment intensities are quite common at the country and regional level, there is a relative dearth of large cross-country studies estimating employment intensities with a gender-aware perspective. This is likely due to vast idiosyncrasies at the country and regional level that get buried under the weight of aggregate statistics. These findings, based on a panel of 80 countries, provide only broad insight into the potential levers and information that policy makers have available to make growth work in tandem with more equitable employment objectives. As such, the lessons that emerge should be applied in conjunction with more intimate knowledge of how cultural, technological, legal, political, and economic activities uniquely affect one another in particular countries. As Tamanaha (2015)

states, it is the "interconnectedness of society" that demands that attention be paid to these local circumstances. Unfortunately, these are often factors that do not submit to easy quantification (Adkisson, 2014). The next section presents the conceptual basis of the study, while section 3 lays out the estimation strategy and trends in employment intensities from 1990 to 2012 by gender. Section 4 presents the results of the econometric estimations by gender, and section 5 then summarizes and concludes the study.

2 Conceptual Background and Previous Studies

In order to set the stage for the macroeconomic study of how men and women experience the growth-employment relationship differently, this section provides the necessary conceptual background. Lessons from research on gender and macroeconomics are drawn and then previous empirical studies of the determinants of employment intensities are surveyed. The terms "employment intensity", "growth elasticity of employment" and "employment elasticities" are often used interchangeably in the literature, though each describe the responsiveness of employment to a given percentage change in output. For purposes of brevity and consistency, this class of measurements is simply referred to as *employment intensities* throughout the paper. Though country- and regional-level studies are plentiful, there are relatively few large sample cross-country studies as precedent and even fewer that explore gender differences. The few studies reviewed here do, however, serve as a framework to build upon and also serve as a benchmark for comparison. Together, the two literatures form the basis for the empirical exercise of sections 3 and 4.

The Gendered Social Content of Macroeconomic Policies and Structures

An expanding body of research on gender and macroeconomics has helped to illuminate the social content of macroeconomic policies and structures. Some of these findings regarding growth's differential employment impacts are discussed first. The review focuses on the social content of monetary and fiscal policy, trade liberalization, and sectoral composition.

Turning first to the social content of monetary policy, a number of authors have conceptualized and found empirical evidence of the gendered nature of inflation targeting as a policy priority of central banks. Elson and Cagatay (2000) describe how a male "deflationary bias" arises from a central bank's aim of maintaining credibility in international financial markets, which prevents governments from dealing effectively with recessions (see also Seguino and Were 2014; Braunstein and Heintz, 2008; Epstein 2007; Seguino and Grown 2006). The lack of ability to enact expansionary monetary policy disproportionately impacts women's employment relative to men's because "women in the formal sector tend to lose their jobs faster than men, and usually have worse access than men to social safety nets" (Elson and Cagatay, 2000: 1354-1355). Thus, output growth in the context of constrained monetary policy or inflation instability would be associated with differential employment outcomes for women as compared to men. Based on the aforementioned studies, one would expect that output growth, which occurs in a constrained monetary policy environment, might have gender-neutral employment outcomes at best, but that during output contractions women's employment would be more responsive.

Fiscal spending targeted to specific demographic groups come in numerous and sometimes obvious forms, but their differential impact on the growth-employment relationship is more indirect and less easily observed. Seguino and Were (2014) summarize the ways in which targeted fiscal policies impact growth, which is insightful for this employment intensity study. In

addition to the large body of work suggesting that gender equality in educational investment can stimulate productivity and economic growth, they suggest that any fiscal policies that equate the unpaid labor burden will positively impact growth. For example, infrastructure spending leading to transportation improvements can reduce the time women spend in marketing goods and also improve women's access to health care and other services, which lead to increased productivity (Seguino and Were, 2014: i37-38). Access to information and communications technology can also lighten women's work burden and enhance access to relevant information. Thus, public investment in education, infrastructure, and cheap sources of power are associated with macroeconomic growth primarily through women's wage employment and productivity gains, which in turn may impact the employment intensity of that growth for women more than men.

Globalization and the liberalization of markets have implications for growth and employment. In the face of global competition, exporting industries may be expected to become more efficient or risk shutting down. This has led to increased productivity within certain sectors, but also to a reallocation of labor to less productive sectors, namely informal employment in many Latin American and African economies (McMillan and Rodrik, 2011). The evidence that the process of informalization is gendered is well documented in the literature (see for example Chant and Pedwell (2008) and Barrientos and Kritzinger (2004)), and this will impact estimates of employment intensities to the extent that informal employment is not observed in the data on employment. Some of this invisible, informal employment is likely to fall in the category of necessity entrepreneurship, rather than opportunity entrepreneurship as described by Warnecke (2013). Though this type of entrepreneurship can be valuable, it is not correlated with positive economic growth as the latter is (Warnecke 2013; Acs, 2006). Additionally, tariff reductions can result in reduced revenues for the state with negative impacts on public spending as outlined

above and as occurred recently in parts of Latin America (Seguino and Braunstein, 2012). Together, these two processes suggest that trade liberalization may negatively impact employment intensity estimates. On the other hand export strength is often associated with labor- and female-intensive growth (Braunstein, 2012; Van Staveren et al., 2007; Ozler, 2000; Standing, 1999; Mehra and Gammage, 1999). Similarly, Papyrakis et al. (2012) suggest that there is an overall beneficial impact of trade expansion on women's employment, both relative to men's employment and in absolute terms, although it is largely concentrated in unskilled manufacturing. Thus, the impact of market liberalization on employment intensities is likely to be mixed depending on which sectors are most responsive.

In this globalized context, the sectoral composition of the macroeconomy is also likely to affect the employment intensity of growth in various ways for women and men. The sectoral composition broadly describes the level of industrialization. For semi-industrialized economies, Seguino and Grown (2006) support the observation that export oriented manufacturing has increased women's share of employment, but that this process may dissipate as an economy becomes more industrialized. As well, in developing economies with less competitive manufacturing sectors, trade liberalization may force economies to reduce tariffs on imports of labor-intensive manufacturing goods, thus resulting in job losses or an informalization of employment for women (Seguino and Grown, 2006). Different stages of development and industrialization have often been characterized by evolving patterns of occupational segregation by gender. For example, women are much more likely to be employed in services than men. For the entire 1990-2012 period, 71% of women's total employment is in services, whereas men's employment in services is 51% of total men's employment.[1]

In summary, when growth occurs in various contexts of macroeconomic policies, stages of industrialization, and macroeconomic structures, men and women are likely to experience the growth-employment relationship differently. This is a critical process to better understand because employment plays a vital role in generating livelihoods and allowing individuals to participate in the benefits of GDP growth (Osmani, 2004; Van der Hoeven and Lübker, 2006). We next turn to a survey of empirical cross-country studies that focus on the determinants of the employment intensity of growth before taking on a gender disaggregated investigation.

Prior Cross-Country Studies of the Employment Intensity of Growth

Even though there is an abundance of studies estimating employment intensities at the sectoral, country, and regional levels, there is a relative dearth of large sample cross-country studies that disaggregate by gender. In this section, we review the findings of the available cross-country studies to set the stage for our gender-disaggregated study. The review is not only restricted to cross-country studies, but also to studies that estimate factors influencing employment intensities. This is because our focus is not simply on generating point estimates of employment intensities. Rather it is on better understanding how policy and structural features of economies differentially impact those intensities. In what follows, the literature is organized into four categories of potential structural determinants: macroeconomic structure, global positioning, demographic and labor market features, and governance. Lastly, we discuss any gender-disaggregated studies.

While many of the studies focus on single countries or regions, Crivelli et al. (2012), Kapsos (2005), and Arias-Vazquez et al. (2012) provide large sample cross-country studies focusing on the 1990s and first decade of the 2000s. In several ways, these studies embody many

of the common findings from regional studies. Beginning with macroeconomic structure, all three find that employment intensities are positively related to the relative share of employment in services. This is consistent with Mourre (2004) and Döpke (2001) for the Euro area. Kapsos (2005) estimates that for 1991-2003, service sector intensities were three times higher than those of the agricultural and industrial sectors, which he describes as evidence of global structural change. Not all of the studies reviewed considered macroeconomic instability as a determinant, but of those that did, Crivelli et al. (2012) and Kapsos (2005) find that greater volatility is associated with lower employment intensities. Crivelli et al. (2012) estimates volatility with the coefficient of variation of output growth, whereas Kapsos (2005) proxies volatility with inflation. Given the potential gendered outcomes of a deflationary bias in monetary policy described above, these two measures may be capturing different processes. Inflation, though often used as a proxy for economic volatility, may actually be picking up the effects of monetary policy orientation. For this reason, we are careful to distinguish inflation and the coefficient of variation in output growth as separate, but overlapping, features of the macroeconomy. In addition to sectoral composition, inflation, and growth volatility, Arias-Vazquez et al. (2012), Richter and Witkowski (2014), and McMillan and Rodrik (2011) also find that higher employment intensities are associated with lower natural resource rents, as natural resource extraction is not historically an employment intensive industry.

Turning to an economy's global positioning as a determinant of employment intensities, the evidence is mixed. For example, Richter and Witkowski (2014) find that higher export diversity is positively related to employment intensities, but others present mixed evidence as to the impact of openness, foreign direct investment, and terms of trade. In a review of empirical studies of growth and job creation, Basnett and Sen (2013) also conclude that the evidence on

trade liberalization's impact is inconclusive. This mixed evidence is consistent with the complexities of market liberalization discussed above.

There are more commonalities among the studies reviewed regarding the impact of demographic and labor market features. One common finding is that of Kapsos (2005), which states that larger supplies of labor are positively related to employment intensities. Crivelli et al., (2012:11) adds that countries with a higher share of urban populations are typically characterized by larger employment elasticities although higher population density, labor force growth, and working-age population growth are negatively correlated. The influence of demographic characteristics is generally not highlighted in discussions nearly to the extent that labor market policies are in the studies we reviewed. Various measurements of labor market rigidities and labor costs are applied, which impact the results of the studies surveyed. For the Euro area, Döpke (2001) and Mourre (2004) find that greater labor market flexibilities are associated with higher employment elasticities. Crivelli et al. (2012) and Richter and Witkowski (2014) find similar results, but Kapsos (2005) does not find statistically significant evidence and Basnett and Sen (2013) suggest the evidence is inconclusive. Some studies do find a statistically significant role of government size, in which smaller government consumption (as a percent of GDP) is associated with larger employment intensities (Crivelli et al., 2012; Richter and Witkowski, 2014).

Kapsos (2005) was the only large sample, cross-country study reviewed that estimated the determinants of employment intensities by gender. He found evidence that the annual growth in youth and working age population are associated with higher employment intensities and that greater export-orientation may lead to a higher employment intensity of growth for women.

Many of the other explanatory variables for women's employment intensity are consistent (in terms of sign and significance) with the estimates from the total employment intensity specification. He does not however provide a side-by-side statistical comparison of the determinants of men and women's elasticities. In this study, we follow similar methods as Kapsos (2005) to construct our point estimates for women and men's employment intensities, but expand the focus to include insights from the gender and macroeconomics literature above.

3 The Employment Intensity of Growth: 1990-2012

In this section the methods used to generate point estimates of employment intensities for the 80 countries are described. Globally, the average employment intensity is .39 and ranges from about .2 to .8.[2] What this means is that a 3% growth in global output has been associated with a .6% increase in employment for some and a 2.4% increase for others. To put this in context, consider a country roughly the size of Guatemala. If output were to grow at a rate of 3%, then the associated employment increase would either be 34,000 people or 137,000 people under the two employment intensity scenarios. It is important to note that there is no ideal figure to which countries' historical employment intensity should be compared. What is high enough will depend on a country's rate of growth in output and labor force among other factors noted previously. A country that has high GDP growth and low labor force growth may not require as high an employment elasticity as another. However, in what the International Labour Organization (ILO) refers to as a global employment crisis, a better understanding of broad-level determinants of employment intensities of growth is essential (ILO, 2012).

We follow the strategy outlined by Kapsos (2005) by estimating employment elasticities as follows,

$$lnE_{it} = \alpha + \beta_1 lnY_{it} + \sum_{i=1}^{I} \beta_{2i} lnY_{it} \times D_i + \sum_{i=1}^{I} \beta_{3i} D_i + \mu_{it} \qquad \forall\ j \tag{1}$$

where E is the level of employment, Y is the level of output for country i in year t, and D is a country dummy variable, and u is the random error term.[3] Equation (1) is estimated for each of the eight multi-year periods (denoted as the j^{th} period). This gives the following expression for the employment intensity of growth in each period, j,

$$\frac{\partial E_i}{\partial Y_i}\left(\frac{Y_i}{E_i}\right) = \beta_1 + \sum_{i=1}^{I} \beta_{2i} \times D_i \qquad \forall\ j \tag{2}$$

We estimate equation (1) separately by gender over eight multi-year intervals between 1990 and 2012. The multi-year periods smooth out the volatility often observed in annual estimates of employment intensities. Although a dynamic specification that uses lagged employment values may circumvent the contemporaneous nature of equation (1), Behar (2012) argues that such a specification is better suited to capture short run elasticities. Thus, the specifications above imply our elasticity estimates describe the longer run relationship between output and employment growth. As Kapsos (2005:6) points out, countries with low GDP growth may exhibit large swings in elasticities arising from small changes in the underlying variables. It is thus important to consider the relative size of GDP growth along with elasticity to get a sense of how much employment actually changed. The data appendices thus report GDP growth rates along with employment intensity estimates for each country. Though a country dummy variable is included, important time-varying phenomena remain unaccounted for that are likely important for a gender disaggregated study. For example, secular increases in women's labor force participation will

tend to inflate estimates of women's employment elasticities. In the multivariate analysis to follow, these issues are addressed more directly.

Employment data are from the ILO's Key Indicators of the Labor Market, 8th edition ILO (2013). Output data are from the World Bank's Development Indicator database (World Bank 2012). All data are in constant 2005 USD unless otherwise noted. If data are missing in a single year, the values were imputed as a simple average of the year before and after. Global employment intensity averages are weighted by the respective country's share of the global labor force. In this case, the global labor force is defined as the summation of all employment for every country in the sample. Similarly, global GDP growth is weighted by the relative size of the country's GDP.

As mentioned above, the average employment intensity is .39 throughout the entire period. For women, the average for the period was .47, compared to .36 for men. These estimates are in line with previous global estimates by Kapsos (2005). However in that study the author estimates employment intensities by gender from 1991-2003, and so these point estimates through 2012 are an update using similar methods. Figure 1 illustrates that much has changed in the past decade regarding the relative position of men and women's employment intensities. For much of the 2000s both measures have a declining trend, suggesting that output growth was becoming less employment intensive for both genders. As well, women's employment intensities are consistently higher than men's throughout the 1990s and early 2000s. At the onset of the global downturn in 2008, the somewhat longstanding relative position of employment intensities reverses. Though not shown in the figure, this pattern is found in both OECD and non-OECD aggregate trends as well. Both the of these observations, the longer-run trend of higher women's

employment intensities and their reversal during the global downturn, may in part be explained by gendered dynamics of labor force participation rates. As is found in many countries, women's labor force participation rates have been rising relative to men's for the past several decades. This would at least partly explain the higher employment intensities of the earlier periods. It is also possible that the reversal of employment intensities during the 2008 economic downturn was driven by women dropping out of the labor force at a faster rate than men. However, women's labor force participation rates relative to men's continued to rise during this period in both OECD and non-OECD economies, which suggest more complex dynamics are at play. Recalling the gender and macroeconomics literature discussed above, there is a rationale for looking beyond just demographic factors and for studying how macroeconomic policy and its structural environment impact the growth-employment relationship differently for women and men. This is the task to which the analysis now turns.

[INSERT FIGURE 1 NEAR HERE]

4 Explaining Employment Intensities by Gender

In this section, we aim to uncover the gendered nature of employment intensities. Equation (1) above was estimated separately for each gender at each of the eight time periods, and those estimates were then regressed on a host of macro-explanatory variables as follows,

$$\frac{\partial E_{ij}}{\partial Y_{ij}}\left(\frac{Y_{ij}}{E_{ij}}\right) = \beta_1 + \beta_1 STRUCTURE_{ij} + \beta_2 DEMOG_{ij} + \alpha_i + \delta_j + \mu_{ij} \qquad (3)$$

where *STRUCTURE* is a vector of macroeconomic structure and policy-related variables and *DEMOG* is a vector of labor-related and demographic controls. The dependent variable is the employment intensity of growth for country *i* during period *j*, and we estimate equation (3) separately for both women and men's employment intensities. We also include country- and period-level fixed effects (α and δ, respectively). Because our dependent variable is itself estimated, it will introduce unwanted heteroskedasticity. To better account for this, all regressions are feasible generalized least squares (fGLS) following the suggestion of Lewis and Linzer (2005). And though we follow established methods for estimating elasticities, many of the same caveats apply to our study. Namely, omitted variable bias and the contemporaneous nature of right- and left-hand side variables require us to interpret these results as correlations, not evidence of causation. Of particular interest to a gendered analysis are the potentially vital roles that social and cultural factors play. Factors such as individualism and masculinity likely impact women's employment intensities, but are reluctantly not explicitly accounted for in this study for two primary reasons. First, the quantification of culture is problematic. Adkisson (2014) surveys several studies that quantify culture and highlight several real challenges, not least of which are how to measure culture and problems of endogeneity. Second is that the use of a fixed effects model statistically accounts for the time-invariant, unobserved factors. Individualism and masculinity are likely slow changing characteristics. Even if reasonable measurements were available, their impact would likely be expressed as null within the fixed effects framework. Nonetheless, our results help identify the macroeconomic context in which gendered employment outcomes are more or less responsive to growth.

Table 1 presents descriptive statistics, the data source, and explanations of each variable used in equation (3). Much of data are from the World Bank (2012) or the International Labour

Organization's Key Indicator's of the Labour Market 8th edition (ILO, 2013), unless otherwise noted. We begin with 80 countries for which relatively complete data were available. However not every country is observed in each of the eight time periods, leaving an unbalanced panel. On average, each country is observed in 5.6 of the 8 periods, resulting in 444 observations. We briefly describe the salient features of each of the categories of independent variables and some a priori expectations before presenting fGLS results.

[INSERT TABLE 1 NEAR HERE]

Beginning with the monetary and fiscal policy-related variables, we include the inflation rate (*inflation*), the log of the degree of real exchange rate undervaluation (*lnUNDERVAL*)[4], the share of public expenditures going toward education *(EDUspending),* and a measure of communications infrastructure (*ICT*). Though not directly measures of monetary policy objectives the first two measures are related to two common demands upon monetary authorities. A differential impact of these two variables on women and men's employment intensities may provide some evidence of a gender bias in inflation targeting policies – albeit only weak evidence. The latter two measures, *ICT* and *EDUspending,* are fiscal policy-related and were identified are potentially growth enhancing either by reducing women's non-wage work burdens or facilitating human capital accumulation. *EDUspending* is the share of total public expenditures going toward public education. This measure is used (rather than as a percent of GDP) to better capture the policy priority of public education. The expectation is that both *ICT* and *EDUspending* will be positively associated with employment intensities for reasons outlined in section 2.

Measures of the macroeconomic structure are also included: the share of total employment in the economy dedicated to services *(serv*ices) and industry (*industry*) by gender[5]; growth of GDP (*growth)*; the volatility of growth (*volatility)* as measured by the coefficient of variation of real GDP growth; per capita income (*logGDPpc*) and three measures of global orientation. Global orientation includes the share of ore and mineral exports to total merchandise exports (*orexmex)*, manufacturing exports as a percent of merchandise exports (*manuf X),* and trade dependence (*trade)*, which is measured as exports plus imports as a percent of GDP. In line with prior studies, it is expected that industrialized economies to have lower employment elasticities relative to agricultural economies due to the greater capital intensity of industry, but this may apply to a lesser extent for semi-industrialized economies. It is also expected that larger service sectors will be positively associated with the employment intensity of growth. There is one subtle but important distinction in how this study differs from previous studies. *Services* and *Industry* are not aggregate shares of total employment for that sector. Rather, the two measures are gender disaggregated so that it is women's employment in services as a percent of women's total employment and similarly for men. Measured this way, it better captures where women and men are found across the sectors. Of course the two measures are highly correlated (around .9) and the results below are robust to either specification.

In line with previous estimates, the impact of *orexmex* is expected to be negative as extractive industries are typically observed to be capital-intensive and lack the engine to drive employment growth. Regarding the other two global orientation measures, *manuf X* is expected to be positively associated with employment elasticities, especially for women since export strength is often associated with labor- and female-intensive employment (Braunstein, 2012),

though this effect may be offset to the extent that globalization is associated with informalization of employment as discussed above.

Turning to the labor and demographic variables, population growth (*gPOP*) is expected to be positively associated with employment elasticities. All else equal, increases in labor supply put downward pressure on real wages and increase employment. Such increases also serve as additional sources of aggregate demand, further increasing employment. Also included is the ratio of female to male labor force participation rates (*FMlfrate*) to capture the impact of increasing female labor force participation on elasticity. Lower ratios are expected to be associated with higher employment elasticities as unused opportunities for women to enter the labor market are greater. As well, a measure of average human capital is included and is based on years of schooling and returns to education (Barro and Lee, 2012; Psacharopoulos, 1994). A measure of gender inequality in education is included as a barometer of the opportunity space for women to increase their work participation. *FMedu* is measured as the ratio of female to male secondary enrollment. In some of the estimations presented next, the level of secondary enrollment is included as an additional control (*enrollment*). The share of labor compensation in GDP (*labsh*) is also included as a control for the functional distribution of income, but is done so with only a weak expectation that it will be positively associated with employment intensities for both genders and the direction of causality likely runs in both directions.

Results

The results from the estimations are presented in Table 2. Equation (3) was estimated under three separate scenarios for each gender, yielding six estimations. Columns (1) and (2) compare the impacts of a set of independent variables on women and men's employment intensities for 80

countries. Columns (3) and (4) differ only by the addition of the *EDUspending*. This is because the data did not go back to 1990 for the same set of 80 countries when included. Columns (1) – (4) make up the core of the statistical analysis. Columns (5) and (6) include an additional control *enrollment* at the expense of reducing the number of observations by approximately 20%, and will be discussed in more detail below. Results that apply to both genders are discussed first, followed by a discussion of the gender differences.

Generally, our results from columns (1) – (4) are in line with the prior studies. For both genders, economies that are less agricultural based, have higher average levels of human capital, faster population growth, and less volatile GDP growth are associated with more employment intensive growth. Some authors had found a negative relationship between natural resource dependence and employment intensities, and though we do find some evidence of this relationship as measured by *orexmex*, the statistical relationship is weak. Overall, the macroeconomic and demographic factors that are most strongly associated with higher employment intensities (as measured by the change resulting from a one standard deviation increase) are increases in human capital, population growth, and a larger share of employment devoted to services and industry. Based on columns (1) and (2), a one standard deviation increase in the level of human capital is associated with a .63 or .46 unit increase in women and men's employment intensities, respectively. This suggests that if increasing the responsiveness of employment to output growth is a policy goal, then increases in educational attainment is a win for both men and women.

For this sample, there is only weak or no evidence of a consistent impact of inflation or currency values on employment intensities. In the one case where inflation is statistically

significant in column (4), it is important to note that several very large outliers heavily influence the standard deviation of inflation.[6] Using instead the percentage point change in employment intensity associated with a change in inflation equal to the difference between the 25th to 75th percentiles, the impact on employment intensities associated with a change in inflation is actually quite small. The hypothesis was that by including both inflation and the volatility of growth (correlated at only -.13 to .27 for the entire sample at each period), the analysis might be able to draw out preliminary evidence of employment differences by gender when monetary policy is constrained by inflation targeting. The interpretation of results in this way rest on the assumption that higher levels of inflation are indicative of monetary policy being less oriented toward inflation targeting. This generalization is difficult to justify at such a broad level of data aggregation. As well, the impact of trade- and globalization-related measures are mixed as expected, with only weak statistical evidence of associations of manufacturing exports and trade dependence on employment intensities.

Economies that have higher shares of service and industrial sector employment relative to agriculture are associated with growth that is more employment intensive. Surprisingly, the coefficient on *Industry* is consistently higher than for *Services*. It was expected that *Services* would be more employment intensive. This result holds if non-gender disaggregated employment data is used as well. Two possible explanations come to mind. First, this may be explained by the fact that the a priori expectation was largely based on semi-industrialized economies only. In this sample there is a much broader range of economies represented. Second, this may be related to the process of pre-mature deindustrialization that has recently been identified by Rodrik (2015), though the application to these results is speculative. To summarize the results thus far, growth is observed to be more employment intensive for both men and women in economies that are less

agricultural based, have higher average levels of human capital, faster population growth, and less volatile GDP growth are associated with more employment intensive growth

Perhaps of more interest, is how the fiscal policy-related measures (*EDUspending* and *ICT),* the share of employment in industry (*Industry*), the volatility of growth (*volatility*), and the female to male secondary school enrollment ratios (*FMedu*) differentially impact employment intensities by gender.

[INSERT TABLE 2 NEAR HERE]

The results in Table 2 suggest that five of the independent variables differentially impact men and women's employment intensities in statistically significant ways: *ICT, FMedu, EDUspending, Industry,* and *volatility*. Each are statistically different between columns (1) and (2) or (3) and (4), but not all are of equal practical significance. Table 3 lists the change in employment intensity associated with a one standard deviation change in the explanatory variables. The volatility of growth is relatively small in magnitude and varies the least across the gendered impact. A one standard deviation change in *volatility* is associated with only a .05 and .13 change in women and men's employment intensities.

The share of women and men's employment devoted to industry is positively associated with the employment intensities of growth. Both *services* and *industry* are more strongly associated with women's employment intensities relative to men's, though the former is only statistically different in the first set of estimations in columns (1) and (2). A small change in the share of women's employment in the industrial sector is associated with a relatively large increase in

employment intensities. Only14.9% of women's employment is in this sector and this result captures the unexploited employment gains found therein for women.

Turning next to the fiscal policy-related and education measures, many of the biggest gender differences emerge. Seguino and Were (2014) suggested that any fiscal policies that equate the unpaid labor burden would positively impact growth. It was hypothesized in Section 2 that growth would thus be more women's employment intensive relative to men's in the context of more communications infrastructure. Our results support this hypothesis. A one standard deviation increase in telephone lines per 100 people (*ICT)* is associated with an increase in women's employment intensity of growth of .24 percentage points. On the contrary, men's employment intensities are not related to communications infrastructure in any statistically significant way. This suggests that fiscal policies that target increased access to telephone, digital networks, and wireless communications may not only increase growth, as Seguino and Were (2014) argue, but may also lead to growth that is more employment intensive for women. The policy priorities placed on public education spending as measured by *EDUspending* are associated with growth that is more employment intensive for women, but statistically insignificant for men's. Thus economies that have information and communications infrastructure and that have a higher percent of expenditures going toward public education tend to have growth that is more employment intensive.

To better capture inequality of opportunity in education, the female to male ratio of secondary school enrollment was included. In each of the first two sets of regressions (columns (1) – (4)), the coefficient on *FMedu* was opposite of what was expected. It was expected that ratios of female enrollment would signal increased opportunity in education translate into higher

employment intensities for women and lower employment intensities for men. However, this was not the case for the initial specifications. It is possible that *FMedu* was being impacted by an omitted variable such as the demographic composition of the population or was capturing the fact that if a person is enrolled in school, then they are less likely to be in the labor force. Columns (5) and (6) add an additional control, *enrollment*, to account for the latter substitution effect of school and employment. This reduces the sample from 80 countries to 70 and the number of observations falls by about 20%. With 70 country-level fixed effects, 8 period-level fixed effects, and a host of explanatory variables, this reduces the number of degrees of freedom down significantly. Nonetheless, it provides a test of how *FMedu* changes when we control for the total enrollment rates. When included, *FMedu* has the expected signs and is statistically different across the genders. The smaller degrees of freedom notwithstanding, this signals that equality in educational opportunities is an important factor in making growth more employment intensive for women. This is in line with a large body of work that shows how gender equality in education can stimulate productivity, growth, and women's wage employment. (For example see Kabeer and Natali, 2013; Klasen, 2002).

With respect to some of the other demographic controls, the growth of the population is positively associated with employment intensive growth. This is as expected when labor supply increases put downward pressure on wages and increased employment. The ratio of the female to male labor force participation rate is only statistically significant in specifications that use much fewer explanatory variables. As is expected in a regression with as many control variables as Table 2, many of them are correlated to some extent and may have inflated standard errors. Though a correlation matrix is not included in this paper, only a few variables have correlations

over .6. These generally involve *logGDPpc*, *hc, ICT,* and *services*. These are discussed in the robustness checks next.

The sensitivity of the estimates to the exclusion of other variables is checked. Overall the results are robust to alternative specifications with only a few exceptions. The first test excludes *logGDPpc*. This is a relevant test as our dependent variable relied on output data in the estimation of equation (1), but none of the estimated coefficients change in any meaningful way. We also add a measure of total factor productivity to the specification, but this does not impact our estimation either. The demographic controls related to labor supplies (*hc, gPOP, FMlfrates*) are the least sensitive to alternative specifications, except that *FMlfrates* becomes statistically significant when the right hand side variables are reduced in number. As well, *trade* and *manuf X* generally remain statistically insignificant unless the sectoral employment controls (*services* and *industry)* are removed. Inflation estimates generally remain as presented in Table 2 without the inclusion of *volatility*. Inflation was also substituted with a measure of inflation volatility (i.e. the coefficient of variation of inflation), but this was statistically insignificant in most specifications. When *trade* is left out the only impact is that *lnUNDERVAL* loses its weak statistical significance. When *industry* is omitted, services remains statistically significant, but the gender differences become even less distinct.

The results are generally robust to deletions of certain variables, but there are significant factors that remain unaccounted for. These omitted variables may partially be addressed by the inclusion of time- and country-level fixed effects, but direct observation of monetary and fiscal policy orientation would no doubt make the analysis much stronger. For example, the degree to which communications infrastructure describes the nature of fiscal policy orientation in the

results presented above is ambiguous. It was also argued that informalization of employment may be hidden from the formal employment data and that the process of informalization may be directly related to trade liberalization. Though the KILM data that is used in this analysis does contain information on informal and vulnerable employment, the data coverage is very sparse for the decade of the 1990s outside of Latin America and Europe. Thus not controlling for informalization rates will likely influence the observed impact of the trade-related variables among others. Lastly, labor market features and policies will likely have gendered impacts on employment intensities. Previous literature has consistently identified labor market flexibility as positively related to employment intensities, but is not included in this study due to data limitations in the earlier periods. Inspection of labor market features may be more well suited for a short, wide panel as data is much more available after 2000.

5 Summary and Conclusion

In a world in which faster growth is becoming more elusive, policy makers will be more and more compelled to achieve smarter growth. In this paper that process is viewed through the lens of gendered employment outcomes. The aim was to better understand how the growth-employment nexus is influenced by macroeconomic structures and policies differentially for men and women. The empirical analysis is built on the shoulders of previous non-gendered studies, as well as the insights that have grown out of the gender and macroeconomics literature. The responsiveness of men and women's employment to output growth for a panel of 80 countries over eight multi-year periods from 1990-2012 was estimated. However, the primary focus of the paper is not on the point estimates of employment intensities themselves, but the econometric explanations of them, which draw out the gendered social content of macroeconomic structure

and policies. In line with prior work, the analysis finds that demographic factors influencing the supply of labor, such as average educational attainment, and general industrialization patterns are associated with more employment intensive GDP growth for both men and women. Of these factors, educational attainment is most strongly associated with employment intensive growth. Policies that support reductions in non-wage care work, such as investments in information and communications technology infrastructure, and policies that prioritize public expenditures on education and girls' secondary school enrollment are especially linked with growth that is more employment intensive for women.

Elson and Cagatay (2000) remind us that all macroeconomic policies are enacted within a certain set of distributive relations and institutional structures and that they all entail a variety of social outcomes, which need to be made explicit. With this premise in mind, these results suggest that macroeconomic policies that increase information and communication infrastructure, promote women's educational attainment, and prioritize expenditures on public education, are all associated with growth that is more employment intensive for women. These findings, based on a panel of 80 countries, provide only broad insight into the potential levers and information that policy makers have available to make growth work in tandem with more equitable employment objectives. As such, the lessons that emerge should be applied in conjunction with more intimate knowledge of economic, social, and institutional features unique to individual countries.

End Notes

[1] Authors' calculations based on ILO (2013).

[2] Authors' calculations of the 25th and 75th percentiles. These estimates are based on ILO (2013).

[3] Though it would be preferable to have output, *Y*, disaggregated by women's, men's and youth's contribution to output, this level of data is not available. Because output and employment data are from two different groups, nothing concrete can be said about the sub-group productivity responses to a given unit of growth. For more on the relationship between employment and productivity intensities, as well as a general discussion on growth elasticities of employment, see Kapsos (2005) and Anderson and Braunstein (2013).

[4] The index of real exchange rate undervaluation is constructed following the methods of Rodrik (2008).

[5] The agricultural sector is omitted, so coefficient estimates are relative to its share.

[6] For example, hyperinflation episodes in Russia, Argentina, Peru, Brazil, Armenia, and Kazakhstan in the early 1990s.

References

Acs, Z. (2006). How is entrepreneurship good for economic growth? *Innovations*, 1 (1), 97–107.

Adkisson, R. V. (2014). Quantifying culture: problems and promises. *Journal of Economic Issues*, 48(1), 89–108.

Anderson, B. and Braunstein, E. (2013). Economic growth and employment from 1990-2010: Explaining elasticities by gender. *Review of Radical Political Economy*, 45(3), 269—277.

Arias-Vazquez, F. J., Lee, J. N., and Newhouse, D. L. (2012). The role of sectoral growth patterns in labor market development. *Background Paper for the World Development Report*.

Barrientos, S. and Kritzinger, A. (2004). Squaring the circle: Global production and the informalization of work in South African fruit exports. *Journal of International Development*, 16(1), 81—92.

Barro, R. J. and Lee, J.-W. (2012). A new data set of educational attainment in the world, 1950—2010. *Journal of Development Economics*, 104, 184—198.

Basnett, Y. and Sen, R. (2013). *What do empirical studies say about economic growth and job creation in developing countries?* Technical Report, Overseas Development Institute. Economic and Private Sector.

Behar, A. (2012). A template for analyzing and projecting labor market indicators. *IMF Technical Notes and Manuals*.

Braunstein, E. (2012). *Neoliberal development macroeconomics: A consideration of its gendered employment effects*. United Nations Research Inst. for Social Development. UNRISD Research Paper 2012-1.

Braunstein, E. and Heintz, J. (2008). Gender bias and central bank policy: employment and inflation reduction. *International Review of Applied Economics*, 22(2), 173—186.

Chant, S. and Pedwell, C. (2008). Women, gender and the informal economy: An assessment of ILO research and suggested ways forward.

Crivelli, E., Furceri, D., and Toujas-Bernate, J. (2012). Can policies affect employment intensity of growth? A cross-country analysis. IMF Working Paper 12/218.

Döpke, J. (2001). The "employment intensity" of growth in Europe. Kiel Working Paper No. 1021. Kiel Institute for the World Economy.

Elson, D. and Cagatay, N. (2000). The social content of macroeconomic policies. *World Development*, 28(7), 1347—1364.

Epstein, G. (2007). *Central banks, inflation targeting and employment creation*. Technical report, International Labour Office.

Heintz, J. (2006). Globalization, economic policy and employment: Poverty and gender implications. Employment Strategy Papers 2006/3. International Labour Office, Geneva, Switzerland.

ILO (2012). Global employment trends 2012: Preventing a deeper jobs crisis. International Labour Organization, Geneva.

ILO (2013). Key indicators in the labour market, 8th edition. International Labour Organization.

Kabeer, N. and Natali, L. (2013). Gender equality and economic growth: Is there a win-win? IDS Working Paper 417.

Kapsos, S. (2005). *The employment intensity of growth: Trends and macroeconomic determinants*. Employment Strategy Papers 2005/12. International Labour Organization.

Klasen, S. (2002). Low schooling for girls, slower growth for all? cross-country evidence on the effect of gender inequality in education on economic development. *The World Bank Economic Review*, 16(3), 345—373.

Lewis, J. B. and Linzer, D. A. (2005). Estimating regression models in which the dependent variable is based on estimates. *Political Analysis*, 13(4), 345—364.

McMillan, M. S. and Rodrik, D. (2011). Globalization, structural change and productivity growth. National Bureau of Economic Research Working Paper No. 17143.

Mehra, R. and Gammage, S. (1999). Trends, countertrends, and gaps in women's employment. *World Development*, 27(3), 533—550.

Mourre, G. (2004). Did the pattern of aggregate employment growth change in the euro area in the late 1990s; European Central Bank. Discussion Paper 358.

Osmani, S. (2004). The employment nexus between growth and poverty: an Asian perspective. *A Report prepared for the Swedish International Development Agency*

(SIDA), Stockholm and the United Nations Development Programme (UNDP), New York.(mimeo.).

Ozler, S. (2000). Export orientation and female share of employment: Evidence from Turkey. *World Development*, 28(7), 1239—1248.

Papyrakis, E., Covarrubias, A., and Verschoor, A. (2012). Gender and trade aspects of labour markets. *Journal of Development Studies*, 48(1), 81—98.

Psacharopoulos, G. (1994). Returns to investment in education: A global update. *World Development*, 22(9), 1325—1343.

Richter, K. and Witkowski, B. (2014). Does growth generate jobs in Eastern Europe and central asia? *World Bank Policy Research Working Paper*, (6759).

Rodrik, D. (2008). The real exchange rate and economic growth. *Brookings papers on Economic Activity*, 2008(2), 365—412.

Rodrik, D. (2015). *Premature deindustrialization*. (National Bureau of Economic Research Working Paper No. 20935).

Seguino, S. and Braunstein, E. (2012). The impact of economic policy and structural change on gender employment inequality in Latin America, 1990-2010. Background paper for International Labour Organization (ILO).

Seguino, S. and Grown, C. (2006). Gender equity and globalization: macroeconomic policy for developing countries. *Journal of International Development*, 18(8), 1081—1104.

Seguino, S. and Were, M. (2014). Gender, development and economic growth in Sub-Saharan Africa. *Journal of African Economies*, 23(suppl 1), i18—i61.

Standing, G. (1999). Global feminization through flexible labor: A theme revisited. *World Development*, 27(3), 583—602.

Tamanaha, B. (2015) The Knowledge and Policy Limits of New Institutional Economics on Development, Journal of Economic Issues, 49:1, 89-109, DOI: 10.1080/00213624.2015.1013881

Van der Hoeven, R. and Lübker, M. (2006). External openness and employment: the need for coherent international and national policies. In *XXII G24 Technical Group Meeting*.

Van Staveren, I., Elson, D., Grown, C., and Cagatay, N. (2007). *Feminist economics of trade*. Routledge.

Warnecke, T. (2013). Entrepreneurship and gender: an institutional perspective. *Journal of Economic Issues*, 47 (2), 455–464.

World Bank (2012). World Development Indicators. The World Bank, Washington, D.C.

Table 1: Descriptive Statistics, 1990-2012*

Variable	Description (Source)	Mean (s.d.)
Employment Intensity (Women)	Women's output elasticity of employment, period average (*author's calculations*)	.47 (.12)
Employment Intensity (Men)	Men's output elasticity of employment, period average (*author's calculations*)	.36 (.13)
Macroeconomic Structure and Policy		
logGDPpc	Log of per capita Gross Domestic Product in constant 2005 USD, period average *(World Bank)*	9.1 (1.4)
inflation	Annual percentage change in consumer price index, period average *(World Bank) note: median=4.7%*	25.4 (172.0)
lnUNDERVAL	Exchange rate undervaluation index, period average *(based on Penn World Table data and (Rodrik 2008))*	-.03 (.32)
EDUspending	Government expenditure on education as a share of government expenditure, period average (*World Bank)*	14.3 (4.5)
ICT	Communications infrastructure. Telephone lines per 100 people. Digital network and fixed wireless subscribers are included, period average *(World Bank)*	26.3 (20.0)
volatility	Coefficient of variation of real GDP growth, period average *(World Bank)*	2.1 (44.7)
growth	Annual growth rate of Gross Domestic Product in constant 2005 USD, period average *(World Bank)*	3.1 (3.1)
services (Women)	Women's employment in services sector as a share of women's total employment*100, period average *(ILO)*	71.7 (18.0)
services (Men)	Men's employment in services sector as a share of men's total employment*100, period average *(ILO)*	51.8 (11.4)
industry (Women)	Women's employment in industrial sector as a share of women's total employment*100, period average *(ILO)*	14.9 (6.7)
industry (Men)	Men's employment in industrial sector as a share of men's total employment*100, period average *(ILO)*	30.9 (8.1)
manuf X	Manufactures exports as percent of merchandise exports, period average *(World Bank)*	51.8 (28.5)
orexmex	Ore and mineral exports as a percent of merchandise exports, period average (*World Bank*)	8.0 (13.1)
trade	Exports plus imports as a percent of GDP*100, period average *(World Bank)*	86.2 (52.6)
Labor and Demographic		
FMlfrates	Ratio of female to male labor force participation*100, period average *(World Bank)*	70.5 (18.8)
hc	Human capital index based on years of schooling *period average (Penn World Tables, Barro and Lee, 2012 and Psacharopoulos, 1994*)	2.6 (.5)
FMedu	Ratio of female to male secondary enrollment*100, period average *(World Bank)*	99.8 (14.1)
enrollment	Ratio of school age children enrolled in secondary school as percent of population of official school age children. (*World Bank)*	75.3 (21.1)
labsh	Share of labor compensation in GDP at current national prices, period average *(Penn World Tables)*	53.5 (12.6)
gPOP	Average annual population growth, period average *(World Bank)*	1.6 (1.4)

**Author's calculations. All but the employment intensities are unweighted period averages for the 80 country sample listed in Data Appendix A. Women's and men's employment intensities are weighted by the countries labor force as a share of the total sample labor force.*

Table 2: The Employment Intensity of Growth by Gender, 1990-2012

VARIABLES	(1) Women's Emp. Intensity	(2) Men's Emp. Intensity	(3) Women's Emp. Intensity	(4) Men's Emp. Intensity	(5) Women's Emp. Intensity	(6) Men's Emp. Intensity
Monetary Policy-Related						
inflation	-0.004	0.003	0.007	0.012**	-0.008	0.001
	(0.005)	(0.003)	(0.009)	(0.005)	(0.006)	(0.004)
lnUNDERVAL	0.143	-0.115	0.062	-0.197	0.769***	0.051
	(0.204)	(0.150)	(0.239)	(0.208)	(0.266)	(0.203)
Fiscal Policy-Related						
ICT	0.012**	-0.006	0.014**	0.003	0.007	0.009
	(0.006)	(0.005)	(0.007)	(0.006)	(0.006)	(0.006)
EDUspending			0.043**	-0.002		
			(0.019)	(0.014)		
Macroeconomic Structure						
services	0.023***	0.008*	0.021**	0.010*	0.007	-0.006
	(0.007)	(0.005)	(0.009)	(0.006)	(0.009)	(0.006)
industry	0.046***	0.018***	0.057***	0.019*	0.055***	0.014*
	(0.011)	(0.007)	(0.016)	(0.011)	(0.011)	(0.007)
manufX	-0.004	0.005	-0.014***	0.005	-0.002	0.009***
	(0.005)	(0.003)	(0.005)	(0.004)	(0.005)	(0.003)
orexmex	-0.004	-0.005	-0.024**	-0.010	-0.001	-0.012**
	(0.009)	(0.005)	(0.012)	(0.008)	(0.009)	(0.006)
trade	0.001	0.002*	0.001	0.002	-0.003	0.002
	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)	(0.001)
volatility	-0.000**	-0.003***	-0.001**	-0.003***	-0.001***	-0.004***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
growth	0.010	-0.024***	-0.022	-0.027**	0.005	-0.026**
	(0.013)	(0.009)	(0.016)	(0.012)	(0.017)	(0.011)
logGDPpc	0.281	0.083	0.157	-0.067	1.069***	-0.113
	(0.315)	(0.240)	(0.422)	(0.310)	(0.383)	(0.298)
Labor and Demographic						
FMlfrates	0.006	0.008	-0.005	0.008	-0.005	-0.013
	(0.010)	(0.008)	(0.013)	(0.010)	(0.013)	(0.009)
FMedu	-0.007	-0.010**	-0.019**	-0.019***	0.016**	-0.005
	(0.007)	(0.004)	(0.008)	(0.006)	(0.008)	(0.004)
enrollment					-0.020**	-0.014***
					(0.009)	(0.005)
hc	1.259***	0.912***	0.870*	1.289***	3.486***	1.814***
	(0.407)	(0.340)	(0.527)	(0.449)	(0.690)	(0.519)
gPOP	0.283***	0.147***	0.259***	0.240***	0.216***	0.123***
	(0.039)	(0.028)	(0.094)	(0.069)	(0.047)	(0.030)
labsh	0.002	0.009	0.005	0.012	0.027*	0.022**
	(0.012)	(0.008)	(0.014)	(0.011)	(0.016)	(0.011)
Cntry Fixed Effects	included	Included	included	Included	included	Included
Prd. Fixed Effects	included	included	Included	included	Included	included
Constant	-7.766**	-3.599	-4.092	-2.925	-19.403***	-4.007
	(3.260)	(2.725)	(4.404)	(3.385)	(4.524)	(4.112)
Observations	444	444	361	361	308	308
# of Countries	80	80	80	80	70	70

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3: Estimated Gender Differences

A one std. deviation change in…	…associated change in employment intensity		Difference (Abs. Value)
	Women	Men	
ICT	0.24	-0.12	0.36
FMedu	0.23	-0.07	0.30
EDUspending	0.19	-0.01	0.20
industry	0.31	0.15	0.16
volatility	0.05	0.13	0.08


Figure 1: Global Employment Intensity of Growth by Gender 1990-1992
Employment Intensity
.1
.2
.3
.4
.5
.6
'90-'92
'93-'95
'96-'98
'99-'01
'02-'05
'05-'07
'08-'10
'11-'12
Women
Men

Data Appendix A: Employment Intensity Estimates by Gender, 1990-2012

	1990-1992		1993-1995		1996-1998		1999-2001		2002-2004		2005-2007		2008-2010		2011-2012	
non-OECD Countries	M	W	M	W	M	W	M	W	M	W	M	W	M	W	M	W
Armenia	0.07	0.02	-1.19	-1.47	-0.52	-1.13	-1.14	-1.82	-0.31	-0.40	0.05	-0.38	-0.91	-1.30	0.18	0.05
Bahrain	0.50	-0.03	1.17	3.36	0.54	1.42	0.95	1.20	0.99	0.22	1.77	1.47	2.15	2.04	0.34	0.64
Barbados	1.19	1.04	1.69	1.71	0.65	0.09	0.19	0.29	0.87	1.36	0.40	0.56	0.08	0.46	-	-
Benin	1.07	1.36	0.76	1.13	0.32	0.83	0.36	0.81	1.00	1.05	0.97	0.82	1.35	1.35	0.57	0.65
Bolivia	0.88	1.74	0.45	0.83	0.52	0.94	0.81	0.96	0.81	1.08	0.53	0.75	0.59	0.77	0.45	0.49
Botswana	2.30	3.30	0.73	0.92	0.79	0.75	1.69	0.33	0.61	0.26	0.53	0.48	-0.19	-0.26	0.25	0.47
Bulgaria	-0.57	-0.52	0.78	0.39	0.00	-0.37	-0.83	-0.47	0.65	0.38	0.73	0.71	1.31	0.98	-1.95	-0.39
Cameroon	-0.78	-1.47	0.71	1.11	0.66	0.73	0.62	0.65	0.90	0.97	1.07	1.15	1.31	1.42	0.66	0.69
Colombia	1.15	1.45	0.52	1.76	1.47	3.97	0.86	2.40	0.53	0.93	-0.09	-0.01	1.12	2.38	0.55	0.68
Costa Rica	0.38	0.41	0.68	1.19	0.72	1.55	1.64	4.63	0.43	0.11	0.46	0.64	0.48	0.84	0.45	0.48
Cyprus	0.84	0.89	0.75	0.67	0.42	0.46	1.37	2.69	1.05	0.84	0.54	0.97	0.55	-0.21	1.28	1.37
Dominican Republic	0.19	-0.13	0.73	2.10	0.33	0.78	0.10	0.77	2.57	-2.51	0.32	0.59	0.29	0.94	0.43	0.43
Ecuador	1.44	2.95	0.76	1.45	0.77	1.36	1.23	3.29	0.55	1.22	0.81	0.79	1.17	2.16	0.37	0.45
Egypt, Arab Rep.	-0.30	1.44	0.48	0.03	0.44	-0.13	0.16	0.29	1.14	1.51	0.21	1.86	0.46	0.46	1.03	1.37
Guatemala	0.31	0.57	0.22	0.50	0.34	0.65	0.87	1.25	0.93	1.20	0.62	1.10	1.45	1.75	1.08	1.15
Hong Kong SAR, China	0.03	-0.16	-0.02	0.77	0.29	-0.03	0.24	0.90	0.10	0.24	0.15	0.41	0.05	-0.03	0.49	0.42
India	0.39	0.58	0.31	0.35	0.42	0.32	0.49	0.65	0.32	0.56	0.17	-0.24	0.19	-0.36	0.56	0.73
Indonesia	0.87	0.68	0.43	0.54	0.04	-0.17	0.40	-0.20	0.35	0.20	0.32	0.70	0.47	0.37	0.26	0.30
Iran, Islamic Rep.	-0.01	0.69	0.97	3.05	1.15	3.58	0.87	2.35	0.92	2.13	0.20	-0.16	0.12	1.96	-	-
Jordan	0.37	0.39	1.70	3.31	0.68	2.95	-0.15	0.50	0.62	-0.01	0.77	2.06	1.38	2.38	1.51	1.61
Kazakhstan	0.35	0.59	0.11	0.05	0.15	0.02	0.15	0.29	0.19	0.16	0.21	0.27	0.39	0.38	0.24	0.27
Kenya	-4.29	-3.83	0.88	0.88	1.15	1.10	0.95	0.90	0.58	0.56	0.51	0.50	0.75	0.76	0.73	0.74
Kuwait	-	-	0.20	-0.51	1.33	2.20	1.25	1.81	0.27	0.21	1.20	0.87	-1.36	-1.39	-	-
Kyrgyz Republic	-0.08	-0.05	-0.08	-0.04	0.31	0.21	0.42	0.26	0.50	0.36	0.39	0.33	0.84	0.70	-1.96	-2.41
Latvia	0.06	0.10	-2.60	-4.24	-0.43	-0.23	-0.33	0.18	0.31	-0.13	0.24	0.32	1.15	0.61	0.90	0.26
Lesotho	0.15	-0.32	1.39	2.21	-0.94	-1.45	-1.16	-2.29	-0.52	-1.49	1.29	2.06	0.52	0.44	0.13	-0.55
Lithuania	-0.34	-0.12	0.96	0.48	-0.07	-0.01	-1.04	-0.63	0.03	0.00	0.09	0.18	1.02	0.29	0.89	0.71
Malaysia	0.34	0.26	0.40	0.37	0.01	0.02	0.52	1.04	0.25	0.54	0.25	0.55	0.40	0.52	0.45	0.51
Malta	0.07	0.25	0.06	0.17	0.20	0.61	0.25	0.75	-	-	0.23	1.49	0.32	0.61	-0.36	7.13
Mauritius	0.31	0.46	0.27	0.91	0.20	0.45	0.34	0.47	-0.16	-0.28	0.16	0.34	0.16	0.92	0.23	0.39
Moldova	-0.01	-0.01	0.04	0.04	0.03	0.01	-0.30	-0.37	-1.32	-1.15	-0.52	-1.57	0.02	0.23	5.70	3.05
Mongolia	-0.35	-0.31	0.11	0.31	0.58	0.60	1.21	1.25	0.31	0.29	0.33	0.25	0.40	0.44	0.14	0.17
Niger	-0.48	-1.13	1.03	2.29	0.51	1.05	0.61	1.45	1.17	0.86	0.74	0.78	0.64	0.70	0.34	0.38
Panama	0.79	0.76	1.05	2.36	0.59	0.56	0.23	1.50	0.65	0.76	0.36	0.46	0.19	0.35	0.20	0.21
Paraguay	2.42	3.78	0.71	1.08	0.37	-1.15	-1.04	-2.66	0.99	1.50	0.56	0.70	0.13	0.03	-1.27	-1.75
Peru	-	-	0.49	0.81	0.87	1.63	0.96	0.56	0.12	-0.02	0.62	1.02	0.31	0.57	0.28	0.33
Philippines	-	-	0.75	1.00	0.45	0.70	0.48	0.92	0.53	0.08	0.23	0.21	0.50	0.79	0.34	0.36
Russian Federation	-0.46	-0.35	0.38	0.42	0.83	0.75	0.21	0.28	0.16	0.29	0.20	0.22	0.38	0.22	0.23	0.20
Saudi Arabia	0.92	-0.24	3.57	25.46	-0.70	2.43	1.60	0.45	0.93	0.20	0.71	0.41	0.61	0.27	0.57	-0.85
Senegal	2.62	3.17	0.82	1.11	0.51	0.74	0.68	0.86	0.49	0.57	0.76	0.87	0.88	1.00	0.92	0.92
South Africa	-0.83	-4.47	2.43	3.90	-0.06	0.95	0.10	1.64	0.28	-0.20	0.42	0.57	-0.84	-1.21	0.61	0.58

Data Appendix A: Employment Intensity Estimates by Gender, 1990-2012 *(Continued)*

	1990-1992		1993-1995		1996-1998		1999-2001		2002-2004		2005-2007		2008-2010		2011-2012	
	M	W	M	W	M	W	M	W	M	W	M	W	M	W	M	W
Sri Lanka	0.25	0.77	0.13	0.62	0.55	2.07	0.16	0.40	0.12	0.04	0.24	0.98	0.12	-0.30	0.09	0.22
Thailand	0.25	-0.14	0.09	0.02	0.05	0.02	0.71	0.87	0.29	0.24	0.30	0.20	0.14	0.09	0.11	0.13
Togo	-0.44	-1.08	0.16	0.46	0.29	0.44	-2.37	-3.17	0.81	1.10	0.96	1.05	0.87	0.77	0.55	0.48
Trinidad and Tobago	-3.52	0.64	1.19	1.41	0.59	0.53	0.51	0.66	0.24	0.65	0.24	0.22	0.23	0.34	0.55	0.87
Uruguay	0.59	1.02	0.23	0.49	0.17	0.27	-0.41	-1.09	-0.26	-0.22	0.36	0.34	0.16	0.32	0.22	0.14
Venezuela, RB	0.69	0.50	0.71	1.91	0.90	2.34	0.92	2.04	0.21	0.19	0.33	0.45	-0.27	-0.47	0.44	0.53
OECD Countries																
Argentina	-0.03	0.07	-0.23	0.13	0.56	0.86	0.99	-0.60	0.79	1.06	0.29	0.14	-	-	-	-
Australia	-	-	0.71	1.07	0.28	0.49	0.43	0.98	0.56	0.60	0.86	0.96	0.66	0.77	0.11	0.28
Austria	0.52	1.63	0.74	1.43	-0.11	0.10	0.07	0.36	-0.25	0.08	0.69	0.68	0.37	-0.40	0.29	1.45
Belgium	-0.22	2.42	0.09	0.26	-0.04	0.69	0.49	0.49	0.21	0.81	0.49	0.91	0.45	0.16	-	-
Brazil	-	-	0.39	0.76	0.75	1.14	0.50	0.63	0.63	0.87	0.31	0.39	0.24	0.47	1.10	1.62
Canada	-2.06	-0.35	0.46	0.49	0.48	0.66	0.40	0.59	0.75	0.93	0.69	1.09	0.72	0.22	0.63	0.67
Chile	0.24	0.70	0.23	0.14	0.31	0.77	0.27	0.30	0.39	1.06	0.55	1.01	0.84	2.41	0.31	0.49
Czech Republic	-0.73	1.64	0.16	0.17	1.23	2.31	-0.05	-0.05	-0.21	-0.16	0.31	0.24	0.31	0.28	-0.44	-1.14
Denmark	-0.09	0.41	0.59	-0.39	0.13	0.86	-0.18	0.27	-0.07	0.42	0.42	0.60	0.94	0.41	-	-
Finland	2.21	1.91	0.42	-0.06	0.34	0.34	0.39	0.39	-0.02	-0.08	0.45	0.44	0.61	0.14	0.18	-0.76
France	-0.46	-0.03	-0.10	0.33	0.10	0.24	0.76	0.87	0.25	0.85	0.27	0.73	0.44	0.09	-	-
Germany	-0.67	-0.84	-0.18	0.23	0.05	0.53	-0.07	0.46	-0.19	0.19	0.53	0.74	0.16	-0.08	0.57	0.63
Greece	2.25	7.35	0.85	1.68	0.08	0.72	0.06	0.22	0.11	0.41	0.17	0.47	0.72	0.23	1.37	1.25
Hungary	-0.15	-0.93	0.15	-1.44	-0.15	0.39	0.16	0.21	0.09	0.19	0.25	-0.02	0.54	0.17	-0.70	-1.24
Iceland	0.00	-0.25	0.65	0.90	0.46	0.43	0.28	0.42	0.14	0.00	0.52	0.44	0.50	0.18	1.60	2.05
Israel	0.50	1.12	0.80	1.30	0.19	0.77	0.31	0.58	0.83	0.78	0.86	0.83	0.60	0.93	3.20	2.88
Italy	-3.10	-2.16	-0.81	-0.19	-0.13	0.48	0.30	1.16	1.41	3.96	0.52	1.04	0.47	0.27	0.53	-0.37
Japan	1.77	1.43	0.14	0.08	0.41	0.44	-0.35	-0.08	-0.10	0.24	0.23	0.32	0.22	0.15	-0.21	0.04
Luxembourg	-0.24	3.54	-0.22	-0.50	0.19	0.55	0.22	0.62	-0.29	0.50	0.28	0.78	-1.12	-0.98	-	-
Mexico	0.78	1.82	0.19	-0.03	0.61	1.02	0.27	0.68	0.42	1.30	0.58	0.97	0.54	0.51	0.88	1.67
Netherlands	0.85	3.51	0.13	0.66	0.69	1.00	0.65	1.26	-0.61	0.31	0.52	0.81	0.24	-0.13	-0.13	-0.34
New Zealand	0.68	1.15	0.95	1.02	-0.30	0.05	0.91	1.09	0.68	0.80	0.76	0.87	-0.88	-0.58	0.08	0.28
Norway	-0.20	-0.10	0.41	0.41	0.66	0.75	0.09	0.23	-0.07	0.11	1.17	1.27	0.65	0.10	0.37	0.45
Poland	-1.48	-1.40	-0.15	-0.10	0.17	0.12	-0.77	-0.98	0.24	0.13	0.73	0.70	-0.15	0.24	0.01	0.21
Portugal	-2.64	-1.81	-0.17	0.17	0.67	0.71	0.55	0.71	-0.20	0.00	0.26	0.26	1.11	0.35	1.39	0.77
Slovak Republic	0.16	0.33	-0.03	-0.51	-0.15	-0.02	-0.28	0.19	0.33	0.07	0.38	0.28	0.19	0.37	0.34	0.08
Slovenia	-0.19	-0.21	1.80	1.28	0.47	0.38	0.36	0.06	0.56	0.60	0.39	0.26	0.21	0.21	0.36	0.48
Spain	-3.43	0.80	0.18	0.82	0.77	1.04	0.78	1.56	0.87	1.93	0.58	1.25	2.56	0.86	2.87	1.76
Sweden	4.46	3.10	0.16	-0.08	0.16	-0.15	0.74	0.86	-0.14	-0.10	0.59	0.52	0.33	0.02	0.13	1.32
Switzerland	-	-	-0.01	0.20	0.09	0.52	0.25	0.41	-0.03	0.03	0.67	0.56	0.29	-0.25	0.64	1.54
Turkey	0.33	-0.48	0.22	-0.16	0.33	-0.24	0.13	-1.02	0.26	-1.02	0.26	0.45	0.55	0.94	0.66	1.98
United Kingdom	-3.22	-0.26	0.26	0.18	0.40	0.34	0.31	0.37	0.33	0.28	0.25	0.11	0.64	0.24	-	-
United States	0.06	0.26	0.55	0.78	0.46	0.52	0.27	0.38	0.22	0.25	0.58	0.67	1.04	0.41	0.82	0.41

Data Appendix B: Output Growth, 1990-2012

	1990-1992	1993-1995	1996-1998	1999-2001	2002-2004	2005-2007	2008-2010	2011-2012
non-OECD Countries								
Armenia	-26.8	1.2	5.5	6.3	12.6	13.6	8.5	5.9
Bahrain	7.5	5.5	4.0	4.7	6.0	7.6	4.6	2.7
Barbados	-4.2	2.2	4.1	0.8	1.4	3.8	-1.2	0.4
Benin	5.4	4.6	4.7	5.5	3.8	3.7	3.4	4.5
Bolivia	3.8	4.5	4.8	1.5	3.1	4.6	4.5	5.2
Botswana	5.7	4.2	4.9	4.0	4.5	7.1	1.6	5.1
Bulgaria	-8.3	1.1	-1.9	4.0	5.6	6.4	0.4	1.3
Cameroon	-4.3	-0.8	5.0	4.4	3.9	2.8	2.9	4.3
Colombia	4.5	4.5	2.0	0.6	3.9	6.1	3.1	5.4
Costa Rica	5.2	5.4	5.0	3.7	4.5	7.5	2.2	4.8
Cyprus	5.8	4.2	3.1	4.6	2.8	4.4	1.1	-1.0
Dominican Republic	2.0	5.0	7.4	4.7	2.3	9.5	5.5	4.2
Ecuador	3.4	2.8	3.1	0.1	5.0	4.0	3.3	6.5
Egypt, Arab Rep.	3.7	3.8	4.8	5.0	3.2	6.1	5.7	2.0
Guatemala	3.9	4.3	4.1	3.3	3.2	5.0	2.2	3.6
Hong Kong SAR, China	5.3	4.9	1.2	3.6	4.5	7.0	2.2	3.2
India	4.0	6.3	5.9	5.8	6.5	9.5	7.6	4.8
Indonesia	8.4	7.7	-0.3	3.1	4.8	5.8	5.6	6.4
Iran, Islamic Rep.	10.2	0.2	4.4	3.6	6.6	6.1	2.1	-
Jordan	7.2	5.3	2.8	4.3	6.2	8.1	5.0	2.6
Kazakhstan	-8.2	-10.0	0.1	8.7	9.6	9.8	3.9	6.3
Kenya	1.6	2.5	2.6	2.2	2.9	6.4	3.3	4.5
Kuwait	-	15.8	2.2	1.2	10.2	6.7	-0.9	6.3
Kyrgyz Republic	-5.3	-13.7	6.4	4.8	4.7	3.8	3.6	2.5
Latvia	-17.6	-1.2	5.6	6.6	7.4	10.9	-7.5	5.2
Lesotho	5.6	3.6	3.7	3.3	2.5	3.9	5.7	3.9
Lithuania	-13.5	-7.6	6.8	3.0	8.2	8.5	-3.5	4.9
Malaysia	9.1	9.6	3.3	5.2	6.0	5.7	3.6	5.4
Malta	5.7	5.5	4.7	3.3	0.8	3.4	1.5	1.4
Mauritius	6.0	4.5	5.8	4.7	3.8	3.7	4.2	3.5
Moldova	-15.8	-11.2	-3.4	1.6	7.3	5.1	3.0	2.8
Mongolia	-7.0	1.8	3.2	2.4	7.5	8.7	4.7	14.9
Niger	-1.8	2.7	5.5	1.7	2.8	4.5	5.7	6.6
Panama	8.6	3.4	5.5	2.4	4.7	9.3	7.1	10.8
Paraguay	3.1	5.7	2.0	-1.5	2.8	4.1	5.2	1.6
Peru	-1.1	8.7	2.9	1.4	4.7	7.8	6.5	6.6
Philippines	0.9	3.7	3.5	3.5	5.1	5.5	4.3	5.2
Russian Federation	-7.5	-8.5	-2.5	7.2	6.4	7.7	0.6	3.9
Saudi Arabia	7.4	0.3	2.9	1.6	5.7	6.3	5.9	6.8
Senegal	1.0	2.2	3.7	4.7	4.4	4.3	3.5	2.8
South Africa	-1.2	2.5	2.5	3.1	3.7	5.5	1.7	3.0
Sri Lanka	5.1	6.0	5.0	2.9	5.1	6.9	5.8	7.3

Data Appendix B: Output Growth, 1990-2012 *(Continued)*

	1990-1992	1993-1995	1996-1998	1999-2001	2002-2004	2005-2007	2008-2010	2011-2012
Thailand	9.3	8.8	-2.0	3.8	6.3	4.9	2.7	3.3
Togo	-1.6	2.6	7.0	0.0	2.1	2.5	3.2	5.2
Trinidad and Tobago	0.8	2.0	4.8	4.9	10.1	8.1	-0.3	0.0
Uruguay	3.9	2.8	6.2	-2.6	-0.6	6.0	6.1	5.2
Venezuela, RB	7.4	0.6	2.2	0.4	0.6	9.6	0.2	4.9
OECD Countries								
Argentina	7.4	3.0	5.8	-2.9	2.3	8.8	-	-
Australia	1.2	4.0	4.1	3.6	3.7	3.3	2.5	2.9
Austria	3.3	1.9	2.9	2.7	1.7	3.3	-0.2	1.9
Belgium	2.2	1.5	2.4	2.7	1.8	2.4	0.2	0.8
Brazil	-1.1	4.8	1.9	2.0	3.2	4.4	4.1	1.8
Canada	-0.3	3.3	3.3	4.2	2.6	2.7	0.4	2.1
Chile	8.0	7.8	5.7	2.4	4.1	5.0	2.7	5.7
Czech Republic	-6.1	3.1	1.2	3.0	3.6	6.5	0.4	0.4
Denmark	1.6	2.8	2.7	2.3	1.0	2.5	-1.6	0.4
Finland	-3.0	2.3	4.9	3.8	2.7	4.2	-1.6	1.0
France	1.7	1.2	2.2	2.9	1.5	2.2	-0.5	1.0
Germany	4.1	1.0	1.5	2.1	0.3	2.6	0.0	2.0
Greece	1.3	0.8	3.1	4.0	4.6	3.8	-2.8	-6.7
Hungary	-6.2	1.3	2.5	3.7	4.4	2.7	-1.5	-0.1
Iceland	-0.8	1.7	5.3	4.1	3.5	6.0	-3.2	2.0
Israel	6.7	6.3	4.3	4.1	1.9	5.3	3.5	4.0
Italy	1.5	1.4	1.5	2.3	0.7	1.6	-1.6	-1.0
Japan	3.2	1.0	0.7	0.8	1.4	1.7	-0.6	0.7
Luxembourg	5.3	3.2	4.6	6.5	3.4	5.6	-1.1	0.9
Mexico	4.3	1.0	5.8	2.5	2.0	3.7	0.6	3.9
Netherlands	2.8	2.4	3.9	3.5	0.9	3.1	-0.1	-0.2
New Zealand	0.1	5.2	2.4	3.7	4.1	2.8	-0.2	2.0
Norway	2.9	4.0	4.4	2.4	2.1	2.5	-0.4	2.2
Poland	-2.3	5.3	6.1	3.3	3.6	5.5	3.6	3.1
Portugal	3.1	1.1	4.4	3.3	0.5	1.5	-0.3	-2.2
Slovak Republic	-8.0	2.8	5.2	1.6	4.8	8.5	1.7	2.4
Slovenia	-7.2	3.9	4.0	4.2	3.7	5.6	-1.0	-0.9
Spain	2.4	1.4	3.6	4.5	3.0	3.7	-1.0	-0.8
Sweden	-0.5	2.0	2.8	3.5	3.0	3.6	0.3	1.9
Switzerland	0.9	0.5	1.8	2.1	0.9	3.4	1.1	1.4
Turkey	5.0	3.6	5.8	-0.8	6.9	6.7	1.7	5.5
United Kingdom	0.3	4.0	3.8	3.2	3.1	3.1	-1.4	0.6
United States	1.8	3.2	4.2	3.3	2.8	2.6	-0.2	2.3